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CoLocScribe: A Media Space for Information Disclosure in Storytelling

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A Media Space for Information Disclosure in Storytelling

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Abstract. Digital storytelling of remote social interaction, where the situation of a remote group distributed over two locations is captured and a story is generated for later retrieval, can provide valuable insight into the structure and processes in a group. Yet, capturing these situations is a challenge—both from a technical perspective, and from a social perspective. In this paper we present CoLocScribe: a concept and prototype of an advanced media space featuring ubiquitous computing technology for capturing remote social interaction as well as a study of its use providing valuable feedback for the captured persons as well as input for the authors.

1 Introduction

The use of storytelling concepts for capturing group interaction and providing groups with a shared history has already been successfully used in cooperative systems [e.g., Pankoke-Babatz *et al.* 2004]. Here, the story of work is not conceived by a single author, because ‘the story emerges through the interaction’ [Appan *et al.* 2004, p.18].

For storytelling authors, automatic capturing of data on the social interaction in a group provides valuable input for the story. Yet, the users involved in the social interaction should have the possibility to get information on what is captured about them and to specify their preferences concerning their information disclosure [Bellotti & Sellen 1993].

In this paper we introduce CoLocScribe—a media space that captures information on users at the same location and at distance and that presents the information on large-screen public displays. CoLocScribe provides users with information about themselves and about the colleagues and allows them to manage their information disclosure in response to the co-located and remote presence of others. So, CoLocScribe is an excellent tool for both capturing data as input for storytelling in general, as well as for analysing the information disclosure behaviour of collocated and remote users of the media space.

We present the concept and implementation of CoLocScribe. We report on some initial findings of a study concerning the information disclosure behaviour of users. More

precisely, we analysed information disclosure in relation to co-located and collaborating others in the virtual space that is spanned by the media space. Finally, we glance at related work.

2 CoLocScribe Concept

CoLocScribe is a media space for Co-Located and remote publish and Subscribe that is based on three main features. It connects two remote laboratories with a persistent video link, it provides a variety of sensors as information sources from the physical and the electronic working environment, and it offers a visualisation of mutual awareness information of the co-located and remote group.

2.1 CoLocScribe Media Space

In each of the remote laboratories in which the groups work, a CoLocScribe widescreen display is mounted at an exposed position to be viewed from each desk as depicted in Figure 1.

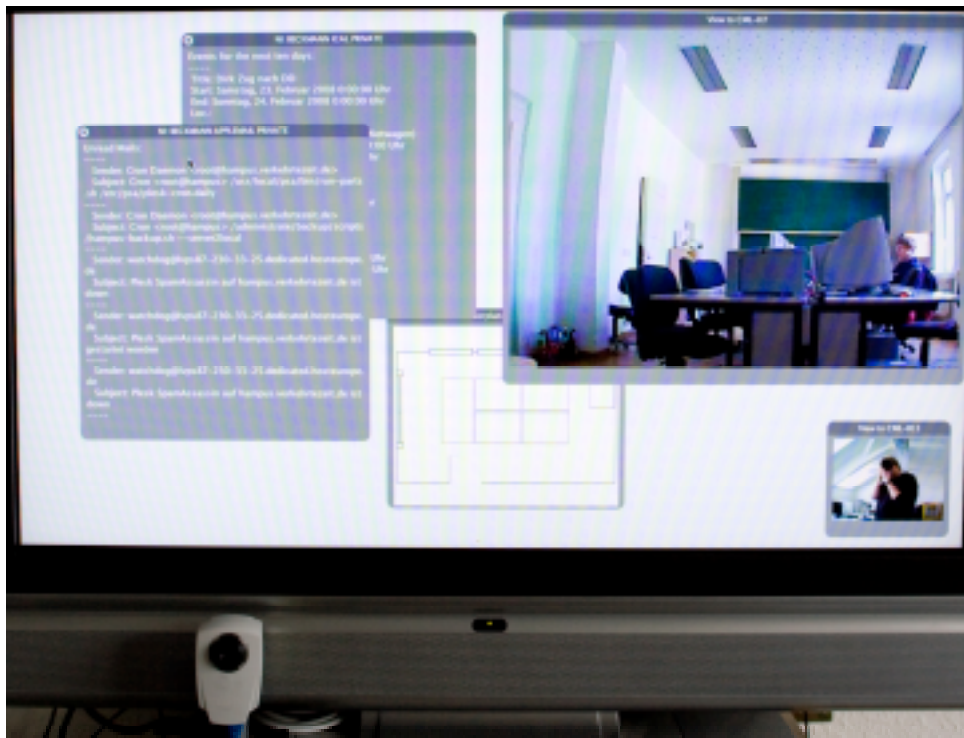


Figure 1. CoLocScribe widescreen display showing the awareness information on the left, the floor plan of the remote laboratory in the centre, as well as the video link to the remote laboratory on the top left and the control video view of the local laboratory on the bottom left.

The group members can arrange the information interactively and freely. Additionally, they can configure the disclosure of information from personal sources. In the first deployment of CoLocScribe we provided the following four types of information sources, based on our past experience of deploying sensor-based infrastructures: *calendar appointments*, *updates in the shared workspace*, *unread emails*, and *information about currently listened music*. The capturing of this information can be specified by the users,

and after the specification the information is disclosed automatically in the media space. Three levels of granularity simplify the specification for the users: no information on a certain source; low-detail information (e.g., count of calendar appointments); high-detail information (e.g., detailed title and location of specific appointments). The gathered information and the video image are displayed synchronously in both lab rooms—providing users with information disclosed by others, but also feedback on their own information disclosure.

2.2 CoLocScribe Storytelling Study

The CoLocScribe study focuses on information disclosure for a variety of events when authoring or retelling the narrative. The captured and displayed video and awareness information were used for the analysis of the user's self-representation and how others perceive the individually disclosed information. We conducted a comprehensive qualitative in-situ interview study as described in [Patten 2002].

For the study nine participants used the CoLocScribe media space over one week to for their project work. All participants were between 23 and 31 years old. While the participants worked in the laboratories and with the CoLocScribe media space, three typical work situations could be identified. First, *project work* means they are collaborating on artefacts and was performed from Monday to Wednesday and on Friday (e.g., source code or documents from their projects). Second, *presentation preparation* was performed on Wednesday for the weekly project meeting (e.g., editing slides, sharing slides via the shared workspace). And finally, *project meeting* took place on Thursday (e.g., presenting and discussing work with colleagues and managers).

The interview guide contains 51 questions in five sections. The in situ interviews were recorded, transcribed, and analysed to derive disclosure behaviour types. The analysis part was to extract the important facts of the interviews and summarise them and followed a four-phase analysis model.

The study revealed three different disclosure behaviour types, meaning three different types of users could be examined:

- *Providers* give information freely away, with a great level of detail
- *Ponderers* balance between the benefit of receiving and disclosing information
- *Profiteers* are mainly interested in receiving information and not in disclosing detailed information

Whereas the Ponderers were the largest group of participants, followed by the Profiteers.

The user types obtained through this study are an excellent approach for developing a conceptual model of disclosure that provides implications for further designs of media spaces in order to provide detailed events for authoring the story of work through automated but user-defined information capturing.

The results mainly focus on encouraging and motivating the Profiteers and Ponderers to disclose information more generously by providing more nuances of level of details when configuring the capturing settings.

3 Implementation of the CoLocScribe Media Space

The CoLocScribe media space consists of hardware for two public displays, and two cameras. It consists of two software applications connecting the two laboratories, the displays, and the cameras. The *CoLocScribeConfigurator* application supports the configuration of the capturing behaviour of all data. The *CoLocScribePresenter* application then presents the gathered information and the live camera streams to look into the distant laboratory, as well as the control view into the local lab-room. For storing and structuring the occurred events we use the sensor-based platform Sens-ation [Gross *et al.* 2006]. It is event-based and supports developers of ubiquitous computing environments to allow fast implementation and verification of concepts concerning interaction on overlapping locations and devices. In Sens-ation sensors are data suppliers, which are connected through its multifarious interfaces. The sensed data were stored persistently. A detailed data model allows to structure data in relation to previously captured data.

4 Related Work

In several systems for storytelling data is captured about the users in the virtual world. For instance, in Scribe [Medler & Magerko 2006] the history of a game is stored. With these type of data there is mostly rather little privacy concern.

The Personal Digital Historian project (PDH) provides photographs and audio files for informal face-to-face meetings [Shen *et al.* 2001]. Despite the fact that these files might contain personal information, there is no discussion of aspects of information disclosure.

In systems and conceptual approaches for ubiquitous computing where typically data are captured by sensors in the physical and in the electronic world, privacy and information disclosure have been addressed [e.g., Langheinrich 2001]. Several author have pointed out that—despite the benefits of mutual information for the efficiency of workgroups—disclosure policies should be treated carefully [e.g., Bellotti & Sellen 1993; Palen & Dourish 2003].

5 Conclusions

In this paper we presented the CoLocScribe media space and qualitative study investigating the dependence of disclosure of awareness information in a media space according to the co-presence of other group members. Everyday life working information, especially detailed awareness information, is disclosed for taking part in social interaction through which significant storytelling content emerges. The CoLocScribe media space was implemented for this study and bases on the Sens-ation platform. The usage period of the CoLocScribe media spaces concluded with a semi-structured interview that was prepared alongside the interview guide, which considered five sections.

For the future, we plan to include an addition collection of available sensors (esp. sensors that are capable of measuring social interaction within this working environment such as electronic mail, instant messaging, and telephones). This collection should then motivate the Profiteers and Ponderers to disclose information more generously.

Furthermore, in future CoLocScribe could be used as input for an Interactive Digital Storytelling (IDS) systems, such as the rule based system Interactive Drama Architecture (IDA) by [Magerko 2003]. So, the IDS system can use CoLocScribe data on local and remote users as input for authoring of narratives. We see a tool for easy retrieving the already structured events as the closed step towards this direction.

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